Grey Literature in an Open Context: From Certainty to New Challenges

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Abstract: 1997 grey literature was defined at Luxembourg as "that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers". Distinction between commercial (white), non-commercial (grey) and other (dirty) literature seemed easy. Six years later, the landscape of scientific and technical information has radically changed. What is the place of grey literature between continuous electronic resources, open archives and new economic models of scientific literature? Is there any place left? The authors describe the evolution and relative decline of traditional grey literature from a French perspective and present some actual trends in the processing of grey literature by INIST-CNRS.

A fairy tale of grey

Once upon a time, in a land called GreyNet ruled a mighty King whose name was Dominic. His TransAtlantic Kingdom reached to both sides of the Ocean, and its borderlines were well defined.

Outside was white literature, were serials and books easy to find, heavy price increases each year, commercial dissemination by publishers and vendors, the "dictate of the marketplace" and impact factors.

Inside were reports, conference proceedings, theses and other scientific and technical material often hardly to find. Inside were learned societies, research organizations and libraries, universities and corporate R&D, low-budget projects, rather nice and idealistic people sharing "common values about grey literature and (…) committed to preserving it" (Gelfand 1996).

Once upon a time, people knew more or less what grey literature was about. Because it was difficult to find, some created directories, reports or databases in order to facilitate access to these non-conventional, fugitive, and sometimes ephemeral publications.

In this Golden Age of Grey, studies stressed the importance and quality of this literature, of its strategic relevance for scientific and technological advances in all kind of subjects (see for example some recent articles: Conn et al. 2003 and Weaver et al. 2002 for the biomedical sector, Ramalho Correia & De Castro Neto 2002 for mathematics and agriculture, and Denda 2002 for women's studies).

This was the era of large-scale and political projects. On the European level, EAGLE was created to facilitate the visibility of and the access to grey documents of the member states (see Wood & Smith 1993, Lankenau 1997). In France, the government decided 1990 the financial support of a national experiment for the centralized collection, description and dissemination of public reports that was conducted by a special committee under the responsibility of the Prime Minister (see CCDA 1995).

At INIST, we organised the acquisition, dissemination and archiving of French grey literature, building a unique collection of 300,000+ scientific reports, conference proceedings and dissertations in Sciences and Humanities, and most of them grey. As a member of EAGLE, we contributed to the SIGLE database (10% of the records are from INIST); as the French national ISRN agency, we tried to implement the international standard for report production and identification (see Schöpfel 2000).

Grey paradise lost

All this seems long ago. Some years later, we doubt if this Golden Age of Grey had really existed. Was it a chimera, as ephemeral as its object?

The French report project completely disappeared, as did the national network for archiving and dissemination of French theses, without being substituted by a workable alternative. From 1998 to 2003, the acquisition of reports, proceedings and dissertations by INIST decreased by 50%, and the French ISRN agency is the only national agency left, without any significant support from the former international agency or the national standards organisation. Results of years of continuous and steady work are at risk of disintegration and decay.

At the same time, a sort of soft or gentle implosion threatens EAGLE, as its most important members are inclined to limit their engagement and cast doubts on the underlying economic model.

Even King Dominic disappeared, leaving his TransAtlantic Kingdom empty.

So what has happened? Why have we lost our grey paradise? What angel hunted us from our favourite playground?

In fact, there happened to be two angels, one called the worldwide web and the other, liberal politics.

The web

Opening the 1st Plenary Session of the 2nd International Conference on Grey Literature in Washington, D.C., Julia Gelfand (1996) defined the web as the "new classical grey literature" and spoke of a dream that come true, empowering authors, increasing the role of libraries and serving the public good. But she already anticipated problems, the need of powerful research tools, of archiving, of standards, the risk of a growing flow of finally useless and non-relevant information, and the concurrence by commercial e-publishing.

Others shared this view. For instance, Judy McDermott (1996) from the Library of Congress stated in her keynote address at the same conference, "Just because information can be produced and easily distributed, it doesn't necessarily mean it should have been" and went on, "Conversely, just because material is grey or hard to acquire doesn't necessarily mean it's worth the effort".

This was prophetical; Julia Gelfand's dream partly turned out to be a nightmare. If the document is on the web, why bother about it? Why invest into printing, supplying, archiving, and cataloguing? Putting the document on the Web is enough. Why continue collecting, recording, archiving non-conventional literature? Google, Yahoo or Altavista will do it for you. - How many stakeholders, once they heard of HTML and learned how to use a search engine, learned also to use this argument with and against information specialists and librarians?

Politics

This was not without impact on public funding. Actually, most of our countries are in a difficult economic and financial situation. Governments redefine public priorities, cutting down public funding, rationalizing and setting for-profit goals to the public sector. Public research and Higher Education sectors are undergoing profound and rapid changes where "marginal" or "fugitive" objects and non-for-profit projects are hard to legitimate.

In France, funding of public research decreases, and the large public research organisations are forced to reconsider their functioning and objectives.

In this context, public funding of production and dissemination of non-conventional scientific documentation shifts from large-scale centralized projects to low budget decentralized networks and initiatives.

The coordination of dissemination of public reports exists no longer. Support for ISRN is vanishing, the national collection and online database of dissertations disappeared, the development of an international cooperation for grey literature is no longer a political but rather a sort of "private" objective of the participating organisations. But what if these institutions – universities for instance - don't have enough money and have to face other priorities and urgencies? There is no powerful lobby to defend the "grey cause".

Grey literature in post-modern age

In this situation, King Dominic comes back and calls the grey citizens for a new round table, a new mission. But what is left from the once mighty Grey Kingdom? And where should we go?

Former certitudes about what is grey disappeared. Some continue to define grey literature in the traditional way, evaluating the part of grey documents at 10-15% of overall scientific production (see Leung 2002 or Weaver et al. 2002). Others describe grey literature as "materials not identifiable through a traditional index or database" and estimate the part of grey or "quasi-grey" production at 60+%, including for instance serials with limited geographical dissemination (see McKimmie & Szurmak 2002). Here, grey is not the document but the way to put a question and to search on the Web, especially the deep or invisible Web through special portals or search engines (see Parsons 2002). So, what is really grey?

With the certitudes disappeared standards, leaving a space of heterogeneity and diversity. Actually, there is nothing in the grey landscape that could be compared to the commercial Digital Object Identifier. Most projects that apply the emerging norm of metadata (Dublin Core) to grey objects are limited, often national or infra-national, or for only one special type of document.

Absence of certitudes, norms, and homogeneity – the Grey Kingdom entered in a post-modern period, in an "era without a dominant ideology but with a pluralism of style" where eclecticism and pragmatism are the new keywords (see van Raaij 1993).

In this post-modern era, instead of telling grey fairy tales or complaining for the past we need some step-stones that could be of help to progress on our way. In the following we'll propose five subjects that may serve as such step-stones. Today there are more questions than answers, but you have to put the right questions if you want to progress.

A new (or old) definition of grey literature?

Ten years ago, Wood & Smith (1993) already had to cope with problems how to define grey literature. Instead of providing a clear-cut definition, they described it by means of several categories such as nature of material, way of acquisition and distribution, print number, format, standards of editing and production, publicity, bibliographic control, availability in libraries, informational value and promotion by producing organisations.

Mackenzie Owens (n.d.) states that "Grey does not imply any qualification, it is merely a characterisation of the distribution mode".

In spite of a lot of conceptual work, obviously we can't give a more specific answer to what is grey than ten years ago. The limits between continuing resources (e-serials, databases) and monographs are moving. So then why not translate Wood & Smith's pragmatic approach into the reality of 2003? Instead of elaborating another (and probably useless) theory, another list of what is grey, why not re-evaluate the underlying categories of information production and dissemination, in order to apply them to those documents that are not submitted to commercial scientific edition?

Our proposition is to move from the traditional definition of grey literature in terms of document type and content (theses, conference proceedings etc.) to a multi-dimensional approach to the non-commercial part of scientific production, based on the distribution and access mode.

Economic model

Collection and dissemination of grey literature never have been totally free. Someone has to pay, anyway. Even if access to grey literature could be described as different to traditional "book-selling channels", we must admit a specific commercial character to this activity. Even if the acquisition of dissertations or reports may seem to be free for libraries (of cause, that's

wrong), dissemination clearly is not, and most of the time the end user has to pay for the supply of the requested document. Often, this price is significantly higher than for information in commercial publications.

For instance, the price of a thesis goes from 50 to 100 euros or more; for a scientific report, the end user has to pay between 15 and 250 euros. This price is not linked to the quality or value of information nor to the price of the document itself but to the rarity of this information, to the relative small number of requests, to the monopolies of archiving and to the number of pages.

The underlying economic model remains uncertain. Let's take the preprints. Most preprints such as in Paul Ginsparg's ArXiv are free, but others are not (for instance, Springer's "Online First" service). So, the same product – for instance, an article in Mathematics that will be published by Springer - may at the same time be free of charge and high-priced? Is this a practicable economic model in the era of Web and open archives?

Our proposition is to analyse the production and dissemination of non-commercial documents in terms of investment, direct and indirect costs, and not only in terms of prices, in order to contribute to one or more economic models for non-conventional literature.

Archiving – but what, and how, and who?

The grey community always shared the conviction that grey literature should be archived because of its fugitive and ephemeral nature. But three aspects need to be considered.

First of all, it is difficult to decide what should be archived without considering the risk of a growing flow of finally useless and non-relevant information (see Gelfand 1996). The same document may exist in more than one version, some of them or all grey. Should all versions be archived? Should we archive work in progress? Why should we do so?

Second, the shift to electronic resources doesn't facilitate the task. Because of the rapid evolution of hard- and software, of supports and formats, and without accepted standards, archiving is discussed rather in terms of 5-10 years than of decennials or centuries. Ironically, we assist to a generalisation of ephemeral information. But for already fugitive documents, this generalisation carries the risk of disappearance.

Archiving not only needs important investments but also a continuity of service. Third question: who should bear the costs of archiving non-conventional literature? There are no commercial publishers to do it. Should it be the producer of information (HE, public and corporate R&D, the researcher-author himself)? Or should it be some central operators (national libraries or information centres)? We already described the difficult financial situation of the public sector. Most often, priorities are given to commercial publications. Result: in the emerging world of web-based archives, conference proceedings, reports and dissertations today are often stored on ephemeral, fugitive and disappearing servers. Tomorrow, what will be left of all this?

Our proposition is to rethink the question of grey archives in the emerging environment of open archives (see Grüttemeier & Mahon 2003).

Quality issues and value chain

The problem of the quality and interest of non-conventional literature is well known. The last GL conference discussed the concept of "dirty grey". But how distinguish grey from dirty grey or black (= web trash)? Can this question be discussed only in terms of content quality?

Rosendaal et al. (2002) described the transformation of the traditional value chain of scientific information into an emerging model with a clear shift in added value to the education and research organizations. They predicted the shift to take place for the serials in the next five to ten years.

For grey literature, the key issue of certification should be addressed differently. Rosendaal's distinction between an "author system" where the text is submitted to a refereed publication medium, and a "reader system" where the text is accepted or not in an open system seems more complex for grey documents. Frequently, the same "key actors" that requested or supported their publication provide their acceptance or approval (research organisations, universities, corporate R&D etc.).

However, it is not always clear if these institutions act as "collective non-commercial referees" or as "collective readers". Often, they do both. Should we, then, speak of a "referee-reader-system"? Or more exactly, of a "two-level-reader-system" where first approval is provided by collective institution (submission) and further acceptance is requested from individual reader (for instance per auto-archiving), both of them being part of the same scientific community?

Additionally, Mackenzie Owen (n.d.) proposes a quality control for grey literature provided by "innovative technologies" such as rating systems or electronic refereeing.

Our proposition is to shift the quality discussion from content evaluation to Rosendaal's value chain approach, introducing the concept of approval and certification.

Copyright issues

Often, grey documents are considered free (or outside) from copyright restrictions. However, reality is more complex, for two reasons. First of all, all these documents bear individual or moral authorship, with specific intellectual rights protected by national law, even if they are not always clearly defined: who owns for instance the intellectual rights for the final report of a public funded research project?

On the other hand, more and more funding bodies – public as well as corporate - are inclined to protect the intellectual content of grey documents, not because of national law but in order to protect the results of scientific research itself. In this context, it would be interesting to

analyse the relationship of available grey material and the increasing number of patents. For example, at INIST we are confronted with a relative decline of research reports published by major research institutions and the corporate sector because reports and even university material are classified, with more or less restrictive distribution.

It seems difficult to have a clear vision of the legal aspects of grey literature, especially during the ongoing transposition of the European copyright directive (see FIPR 2003). Our last proposition is to develop a "legal analyse" of grey production in terms of "accessibility", in order to avoid obscure and erroneous action.

Searching for new horizons

After all, is there any place left for our grey community? Or has the time come to take a definite leave from the TransAtlantic Kingdom and to move King Dominic to Mme Tussaud's cabinet?

We assist to a rapid evolution of the landscape of scientific and technological information. But in the era of concentration of commercial edition and big deals, we should be aware that crucial parts of information rest marginal, excluded from gateways and consortial purchasing and difficult to access through metasearch engines or virtual libraries.

We have to redefine our action of making available and preserving hidden or unconventional information. Grey topics should be discussed and re-evaluated in terms of investment and economic models, of quality and certification, of rights and protection, and of accessibility.

What are our affinities with emerging projects such as SPARC and OAI? Some goals of SPARC projects are quite similar to grey projects (see http://www.arl.org/sparc). SPARC and BiomedCentral develop new economic models that challenge the for-profit STM publishers. The Open Access Initiative tries to offer an answer to some of our own grey questions, by supporting auto-archiving in a standard format and e-publishing in OA publications.

The French National Research Centre CNRS co-organized the first French conference on alternative e-publishing models in January 2003 at Paris (see http://www.inist.fr/openaccess, Grüttemeier & Mahon 2003 or Battisti 2003) and signed, together with the German Max-Planck Gesellschaft and other important European research organisations, the Berlin Declaration on open access to knowledge in the sciences and humanities. This means a fundamental paradigm shift of funding, organisation and evaluation of scientific publication that will change the market of scientific information and the role of libraries, in a way predicted by Mackenzie Owen (n.d.) and Rosendaal et al. (2002).

We are convinced that in the emerging Empire of Virtual Information, our former Grey Kingdom could become a sort of unconventional region or structure, with a specific and different contribution to this new evolution. "In a world in which free trade and instantaneous communication have eliminated many of the barriers to information flow, grey literature is gaining greater importance as a source of information for much of the world's population. It is an indispensable resource for an informed and enlightened public and will undoubtedly

continue to serve as a necessary supplement to journal literature well into the future" (Weintraub 2000).

We need to rethink and reshape our "grey approach" in the context of open archives and free access to scientific results. Learning from model projects may be of help. For instance, the gateway of the French Mathematics librabries "MathDoc" (http://mathdoc.emath.fr) created an index of 4,000+ grey documents (see Lafosse 2003, Sureau & Teissier 2003). The Open Library for Economics RePEc (see Krichel 2000) contains 80,000+ working papers. The New York Academy of Medecine (http://www.nyam.org/library/greylit) supports an important directory of grey literature in the medical sector. The extending German "Virtual Subject Libraries" include grey resources (see Rosemann 2003), as well as the recent INIST portals in Social Sciences and Humanities and in Life Sciences. And last not least, the web-based American GrayLIT Network gives access to over 100,000 recent scientific and technical reports by the US Departments of Energy and Defense, the Environment Protection Agency and the NASA (see Warnick n.d.).

Projects@INIST in a changing context

The impact of this changing environment on INIST's services and projects has been described elsewhere (see Schöpfel 2003). In dealing with grey literature in paper form INIST has often been confronted with difficulties in collecting documents mainly because of an insufficient number of available copies. The copies were stored on our shelves and referenced in several databases such as PASCAL or SIGLE. The user had to order a photocopy at INIST.

With electronic grey literature, copies are no longer a problem. Many producers of grey literature make their documents available on the Internet: either the reference, with or without abstract, or the full text. Very often the documents are found on the institutional server under insignificant headings such as "list of publications of the institute".

INIST started several initiatives attempting to concentrate dispersed references in a unique database, to incite authors to publish electronically and to deposit the documents in reliable repositories, and to allow users an easy access to the full text and free of charge.

In the second part of our communication, we'll describe three projects that change the traditional acquisition and dissemination of grey literature, and in which INIST participates or intends to participate.

The three projects are:

MemSIC: collection and references of theses in information science, documentation and communication.

TEL: a French server for dissertations online.

LARA: localisation of and access to reports - a project still in its beginnings.

The MemSIC project

For several years now INIST has been collecting "thesis" (“mémoires” in French) from students in information science and documentation (“SIC” in French) at a Masters degree level. The documents were received in paper form, catalogued and referenced in the PASCAL and SIGLE databases, and made available to users, locally and by photocopy.

Since 2000, INIST developed together with the university of Nancy a web-based archive for this type of documents called “MemIST” (“IST” = scientific and technical information). At present, we are working together with the new CNRS Centre for Direct Scientific Communication at Lyon (Centre pour la Communication Scientifique Directe or CCSD, see Charnay 2003), created in 2000 by Franck Laloë, a researcher in Physics collaborating with Paul Ginsparg’s ArXiv (see http://www.ccsd.cnrs.fr/). The objective of this project is to load the prototype on a CCSD server in order to set up a specialized repository named “MemSIC” that will give access to the full text (http://MemSIC.ccsd.cnrs.fr/).

Deposit

Students who want to submit their thesis must be registered as a user. Access to the deposit function is password protected. A worksheet allows the student to fill in the metadata. Fields are based on the DC metadata set, but some fields have been added for this specific type of document such as the type of the diploma. In a second time these metadata will be integrated into other databases (PASCAL, SIGLE).

In the next step of the deposit procedure the student chooses among 22 subject categories, then he selects the document format. The document formats allowed at present are DOC, RTF, PDF, PS and HTML. Each document is immediately transformed - if necessary - into the PDF format for dissemination.

Copyright and validation issues

By activating the submit button, each author agrees to disseminate his work via this archive, transferring de facto his intellectual rights to the CCSD.

The head of the programme adds institutional authorization: before making each deposited document available for the public, it must be validated by the head of the programme. It's a simple procedure by exchange of e-mail with the administrator of the archive who has the final decision to make the thesis accessible.

This institutional validation guarantees the scientific approval of the document’s content quality.

Coverage, search tools and environment

MemSIC is open to university programmes in information and communication sciences in France and in French speaking countries, on a Master's degree level.

The interface contains the usual search criteria (title, author, abstract, keywords, subject category, institution, diploma type…) and a simplified keyword search. MemSIC allows browsing by author and subject category and full-text search in the document. By subscribing to the archive, the end user is alerted on each new deposit.

MemSIC is embedded in a larger environment of open archives for information and communication sciences with a repository for articles, communications and preprints ("ArchiveSIC" http://archiveSIC.ccsd.cnrs.fr/) and for doctoral dissertations ("TheSIC"). A common search interface "SIC" for these 3 archives will be added soon.

Why this network?

Few websites have stable URL'S for their lists of publications, and the guarantee of perennial access to the document is low. The readability of the format will arise as another problem in a few years. Several private initiatives originally created to allow auto-archiving of theses and dissertations without institutional control have been abandoned since.

INIST had to choose either to install an open repository or to work with a reliable institution in order to assure a continuity and stability of document access.

Our partner, CCSD, provides an excellent technical environment. A customized version of the e-prints software is used for the submission of documents. It proposes facilities for the deposit, metadata storage and exchange (use of protocols like the OAI-PMH), powerful search software, user-friendly interfaces, personal workspace, alert function and statistics. Last but not least: CCSD has a mission for long-term archiving, thus providing a "guarantee" for the migration of formats and for permanent access.

The main role of INIST will be to promote the project, to "collect" the documents by contact of the heads of the study programmes and to administrate and develop the database. In addition, INIST will load the metadata of the grey documents into its own databases and portals, increasing their visibility and dissemination to the scientific community.

The TEL project

MemSIC widely uses features and elements already developed for "TEL", another CCSD archive, namely the metadata set and the deposit procedure.

CCSD started as the French mirror site for Paul Ginsparg's ArXiv (publications/articles in physics). Soon it developed towards a general site for open archives, with extensions in the scientific fields as well as in document types.

Two of the developments were the setting up a repository for theses and dissertations “TEL” and hosting a repository for articles in information science and documentation (“ArchiveSIC”).

Logically, TEL (“Theses on-line”, http://tel.ccsd.cnrs.fr/) started with dissertations in physics, mathematics and computer science, disciplines used to open archives. Today documents are grouped in 9 scientific fields, with several sub-categories. The majority still comes from physics as shown in the list below (data as of november 17th, 2003):

Physics	761
Mathematics	174
Computer Science	97
Engineering Sciences	79
Sciences of the Universe	62
Biology and Medicine	39
Chemical Sciences	29
Humanities, Social Sciences	20
Other areas	14

A presentation of documents by university of origin shows that the site is open to foreign documents. We find dissertations from Great Britain, Germany, Spain, Switzerland, etc.

At present several public or private initiatives that already give access to dissertations online intend to migrate to TEL or to duplicate and link their sites with TEL. One example: an important consortium of 10 engineering and commercial schools of the Paris region "ParisTech" (= Paris Institute of Technology) who created a repository for dissertations called PASTEL actually proposes to reference these documents also in TEL.

After the disappearance of the former national network for archiving and dissemination of French doctoral dissertations, INIST decided to support the CCSD initiative rather than to create an own archive. In this context, the role of INIST is twofold: incite other well known institutes giving access to dissertations in full text to deposit them in TEL, and reference these documents through its own products and services (portals, databases).

As mentioned before, dissertations in information science, as a subset of TEL, will also be searchable through the SIC interface.

The advantage of projects like MemSIC or TEL is that they are more likely to succeed than others: students are young, willing to learn and accustomed to produce electronic documents. In addition, institutional pressure (“no deposit, no diploma”) facilitates the input to the open archive.

The LARA project

The third project, LARA (= “localization of and access to reports”), is only in its beginning and concerns scientific and technical reports. In this case we intend to create a bibliographic

database for French reports available online or in paper form by using the OAI protocol for metadata harvesting.

This means that INIST limits its contribution to identifying the report producers, to set up the metadata harvesting procedures and to provide a server. In some cases, the documents will be archived on an INIST server, in their original electronic format, converted to a standard format or digitised by INIST. In other cases, the document supply or the access online to the full text will be left to the publishing organization or the document producer. Of course, agreements with these organizations will be necessary.

Data collected by metadata harvesting will be linked with our own existing report catalogue and will be searchable through a web server.

The model for LARA is the UK MAGiC project developed by the British Library and Cranfield University and focussed on reports in the aeronautics sector (see Needham 2002). INIST is in contact with the Cranfield project team. Maybe that this will give place to a transnational collaboration in the field of electronic reports.

Up to date a prototype has been created and metadata harvesting has been tested. Finally, the success of this project will depend on the willingness of public and corporate report producers to cooperate (several have shown their interest), and on the progress for implementing the OAI-MH protocol in France.

Open = free?

In the open archive context information is virtually free for the end user, except costs for downloading and printing of files. Nevertheless, there are costs involved for setting up repositories, developing interfaces, updates of software, metadata harvesting, referencing in portals and databases, promotion, contact with document producers, preparation of agreements, providing technical assistance, etc.

Obviously, these costs can only be supported by a public structure that guarantees a continuity of qualified service and action in a sector without any commercial interests or returns. In the actual economic context we described above, INIST tries to rationalize and optimise the technical and organisational investment, sharing costs and using existing network resources rather than create a new centralized structure. The future will show if this option is practicable and effective, and if this new approach will allow a long-term and secure access to ephemeral and fugitive, non-conventional scientific literature.

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